



# **Global Platform for Rich Media Conferencing and Collaboration**

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# Outlines

- **VRVS General Information**
- **VRVS 3.0: New version in production since Feb. 2003**
- **VRVS Worldwide Deployment**
- **VRVS Statistics**
- **VRVS Next Developments**





# Concept

## **VRVS (Virtual Rooms Videoconferencing System)**

- **provides an independent web based collaborative infrastructure to enable multipoint conferences, with the integration of the most popular technologies and applications available, in different platforms**





# VRVS Key Points

- **Unified and Intuitive Web User Interface** to schedule and join/leave a meeting independently of the application
- **Multi-platform** Windows, Linux, Unix's and Mac
- **Easy to use** Everybody knows how to click on a web page today. Not true for running a VCR
- **Virtual Room Concept and Scheduling** Creation of a virtual space where people can exchange real-time information
- **Join or Leave a Collaborative Session anytime** without the need to know in advance how many participants and booked ports capacity. Just announce the meeting and people will join from anywhere
- **Full** Documentation and Tutorial
- **Self-Service System** No need of technicians or experts to organize and join a conference

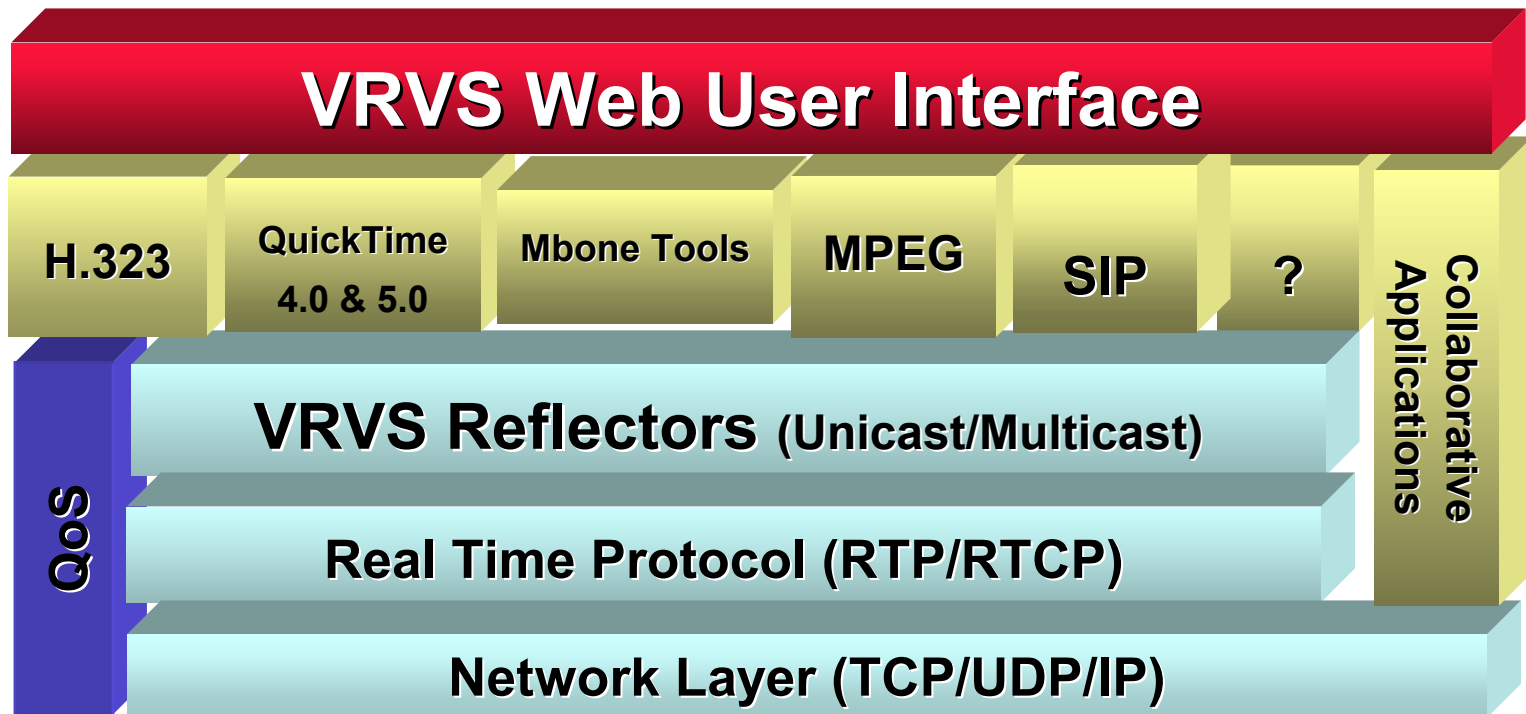




# VRVS Core Architecture

**VRVS combines the best of all standards and products in one unique Architecture**

**Multi-Platform and Multi-Protocol Architecture**





# **VRVS 3.0**

**New version in production since Feb. 2003**





# VRVS, new features

- **Optimized web access** and **user intuitive** interface design
- Improved **Global Scheduling System** transparent to local time zones
- **Community** concept with dedicated Virtual Rooms (VRs)
- **Number of World wide VR** increased from 10 to potentially unlimited
- **J2EE secure** web administration interface
- **SQL DB** server to manage VRVS bookings, user profiles, reflector configuration and monitoring, statistics...
- **User-oriented login** with improved identification and IP detection
- Redesigned and improved **sharing** service
- **Mac OS X** support
- **OpenMash** Mbone support
- Solution for hosts behind **Firewall and NAT**

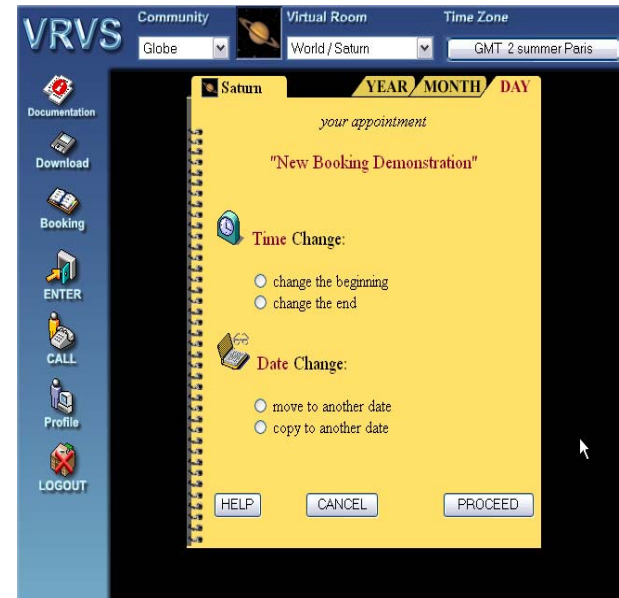




# VRVS 3.0

## Global Scheduling System

- **Booking Wizard**, with auto selection of the Virtual Room
- **Date/Time** shown in the selected time zone
- **Quota** management
- **Password protected** secure meeting
- **Mailing list** feature to keep all the participants in touch of creation and modification or cancellation of booking





# Reflector Software Improvements

- Possibility of **tunneling (TCP or UDP)** between reflector servers  
All communications use only **ONE** port !
- Peer-to-peer design with **high scalability and flexibility**
- Solution for **Firewall and NAT**
- Better design to **accommodate H.323 clients**
- Fully support of **H.263** video codec
- Perform **audio mixing**
- Perform some **packet recovery**
- **Fixed incompatibility** between several H.323 end points
- Remotely **mute/unmute** video or/and audio
- Optimized network **bandwidth utilization**
- Real-time **packet loss monitoring**
- Support up to **16,000** Virtual Rooms





# VRVS on Linux

**Netscape: Virtual Rooms Videoconferencing System (VRVS)**

File Edit View Go Communicator Help

Bookmarks Location: <http://www.vrvs.org/> What's Related

VRVS VRVS Admin VRVS3 CERN -- Phone Java 1.3 API ZDNet

**VRVS** **SATURN** **"Internet2 Meeting"** 08:34:28 YOUR LOCAL TIME 08:58:00

DOC Download Schedule JOIN Call Someone My Profile

**MBONE** **CHAT** **QTIME** **SHARING** **IL323**

package 01 02 ?

**SATURN Virtual Room**

137.138.24.228 137.138.24.228/261 15 f/s 347 kb/s (0%)  
mute color info...

137.138.24.228 137.138.24.228/261 15 f/s 495 kb/s (0.1%)  
mute color info...

137.138.24.228 137.138.24.228/261 38 f/s 273 kb/s (0%)  
mute color info...

137.138.24.228 137.138.24.228/261 15 f/s 118 kb/s (0%)  
mute color info...

137.138.24.228 137.138.24.228/261 9.5 f/s 100 kb/s (0%)  
mute color info...

**VRAT v4.2.20: SATURN Virtual Room**

Listen 0.0 b/s Talk 0.0 b/s  
Speaker Vol 72 Microphone Gain 44

Gregory Denis (VRVS Team)  
pgalvez  
Dantong  
Momitor Stuff  
Olivier Martin (CERN)  
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David Collados (VRVS Team)  
A2  
Philippe-VRVS-Polycom  
Skc5  
g711Ulaw64k  
Vtc1  
Lucy Lynch (University of Oregon)  
Petr Holub (SCB)  
cerveny  
Shawn McKee (U of Michigan)  
Julian J. Bunn (Caltech/CERN)  
Suresh Singh (Caltech)  
Isosif Legrand

"SATURN\_Virtual\_Room"  
Address: pcvrsvint.cern.ch Port: 46456 TTL: 15

VIC v2.9 by VRVS Menu Help Quit

Options... About... Quit

**137.138.24.228**

VIRTUAL INTERNET2 MEMBER MEETING - NETWORK OF THE FUTURE -

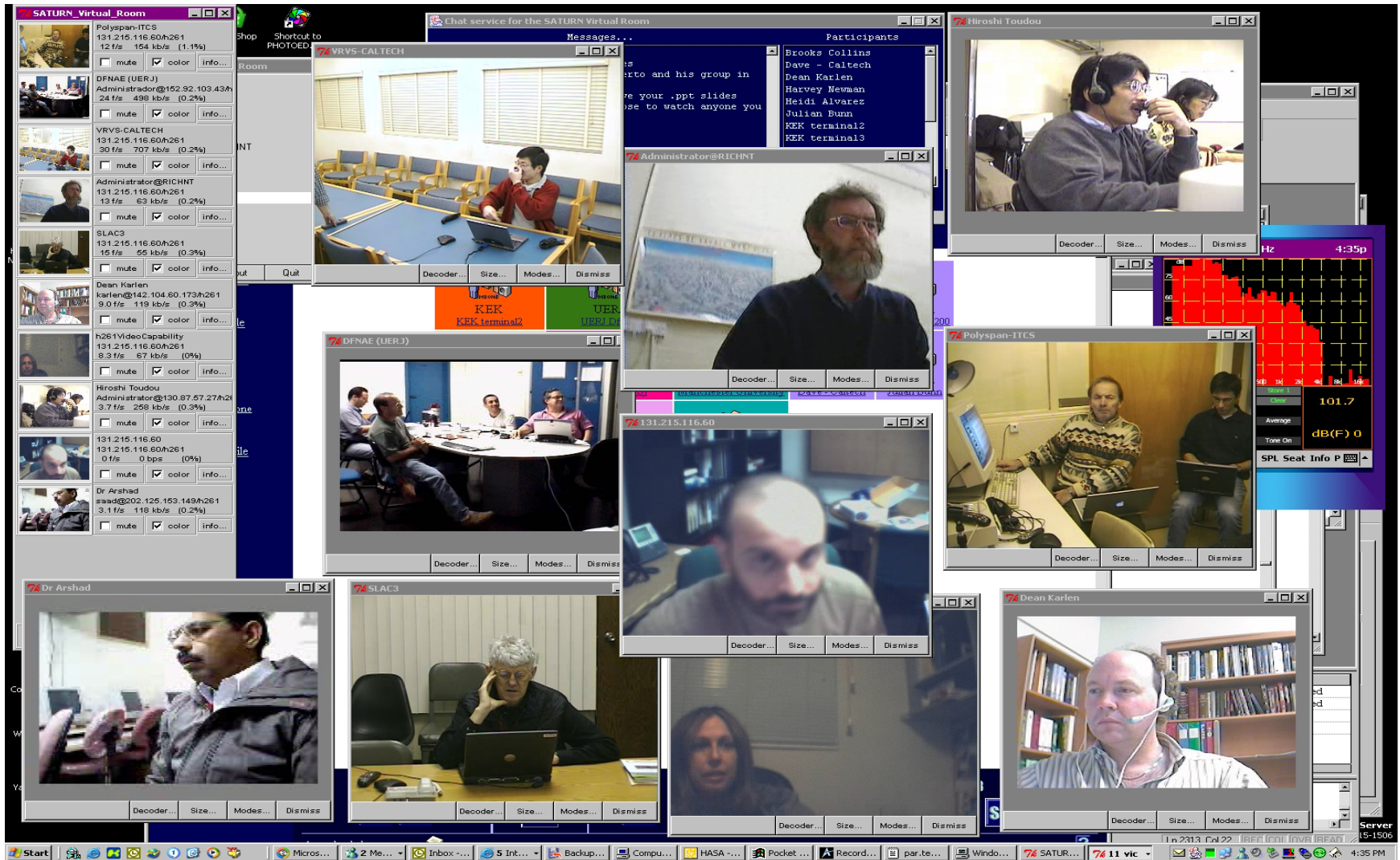
Decoder... Size... Modes... Dismiss

Taskbar: xload, emacs@vrvs01.caltech, xload <2>, [gdenis@pccon3.cern.ch], SATURN\_Virtual\_Room, RAT v4.2.20: SATURN\_V





# VRVS on Windows





# VRVS on Mac OS X

The screenshot displays the VRVS (Virtual Rooms Videoconferencing) application running on a Mac OS X desktop. The main window, titled "Desert Virtual Room - Mozilla", shows a virtual environment with a sandy floor and a blue sky. Several participant windows are visible, each showing a video feed and technical details:

- h261VideoCapability**: 137.138.24.228/h261, 12 f/s, 212 kb/s (2.3%)
- h261VideoCapability**: 137.138.24.228/h261, 16 f/s, 212 kb/s (2.1%)
- Caltech**: 137.138.24.228/h261, 20 f/s, 31 kb/s (1.6%)
- VRVS gregory**: 137.138.24.228/h261, 16 f/s, 197 kb/s (2.2%)

The interface includes a "vic v5.2.1" window with "Settings", "Help", and "Quit" buttons. A "vat v5.2.1" window shows a list of participants and settings, including "listen", "talk", and "Keep Audio". The "vat" window also has "Settings", "Help", and "Quit" buttons.

The main window features a "refresh" button and a "Participants" tab. The "Participants" tab shows a list of participants and their status. The "Main" tab shows a "Use These Clients" section with "VAT" and "VIC" buttons, each with a "Start" button.

The Mac OS X desktop includes a dock with various applications like Safari, iTunes, and Mozilla. The system menu bar at the top shows the time as "Thu 10:23 PM" and the status as "(Plugged In)".





# VRVS 3.0 Web Admin Interface

- **Pure 100% Java J2EE + XML**
- **HTTPS/SSL** secure web interface
- **Monitoring reflectors and users** in ongoing conferences
- **Database Full Control**

The screenshot displays the VRVS 3.0 Web Admin Interface. On the left is a navigation menu with sections: Database (containing links for Cities, Communities, Machines, Reflectors, Tables, Timezones, Users' Profiles, Virtual Rooms, and World Regions), Monitoring (containing links for Reflectors and Users in V. Room), Statistics (containing links for Reflectors and Users), and a LOGOUT button. The main content area is titled 'Reflectors' and includes an 'ADD NEW' button. Below this is a list of reflectors: JET, JINR, JLAB, KEK, KFKI, LIP, NSYSU, NTUA, PUB, RedIRIS, RedIRIS-ES, RNP-BR, RUTHERFORD, SINICA, SLAC, Sonata, SWANSEA, Tokyo, TRIUMF, UERJ, UFL, UFRGS, ULAVE, UPJS, and UQUEBEC. The selected reflector, VRVS-DEMO2, is shown in a detailed configuration form. This form includes fields for ID (184), Label (VRVS-DEMO2), Hostname (DHCP-112-211.caltech.edu), and IP (131.215.112.211). It also has sections for Location (Caltech, Pasadena, California, United States), Topology (Universe), Backup Reflector (VRVS-DEMO4), Type Of Reflector (Default), Version (4.3.0), Port Number (46011), Behind Firewall (No), Inside NAT (No), IP inside NAT, Selectable (No), To Survey (No), RGB Color (D3FFC1), Background File, Admin1 details (First Name: VRVS, Last Name: Team, Email: developers@vrvs.org, Phone: ), Admin2 details (First Name, Last Name, Email, Phone), Enabled status (Yes), License Key, Creation Date (2003-02-10 09:13:15), and an Action button 'Submit this Info'. A 'Show Me More Info' button is located at the bottom of the configuration form.

ID	Label	Hostname	IP
184	VRVS-DEMO2	DHCP-112-211.caltech.edu	131.215.112.211

Location	City, State/Province	Country
Caltech	Pasadena, California	United States

Topology	Backup Reflector	Type Of Reflector
Universe	VRVS-DEMO4	Default

Version	Port Number	Behind Firewall	Inside NAT	IP inside NAT
4.3.0	46011	No	No	

Selectable	To Survey	RGB Color	Background File
No	No	D3FFC1	

Admin1 First Name	Admin1 Last Name	Admin1 Email	Admin1 Phone
VRVS	Team	developers@vrvs.org	

Admin2 First Name	Admin2 Last Name	Admin2 Email	Admin2 Phone

Enabled	License Key	Creation Date	Action
Yes		2003-02-10 09:13:15	Submit this Info

Show Me More Info





# **VRVS deployment worldwide at June 2003**





## 73 VRVS Reflectors Deployed Worldwide

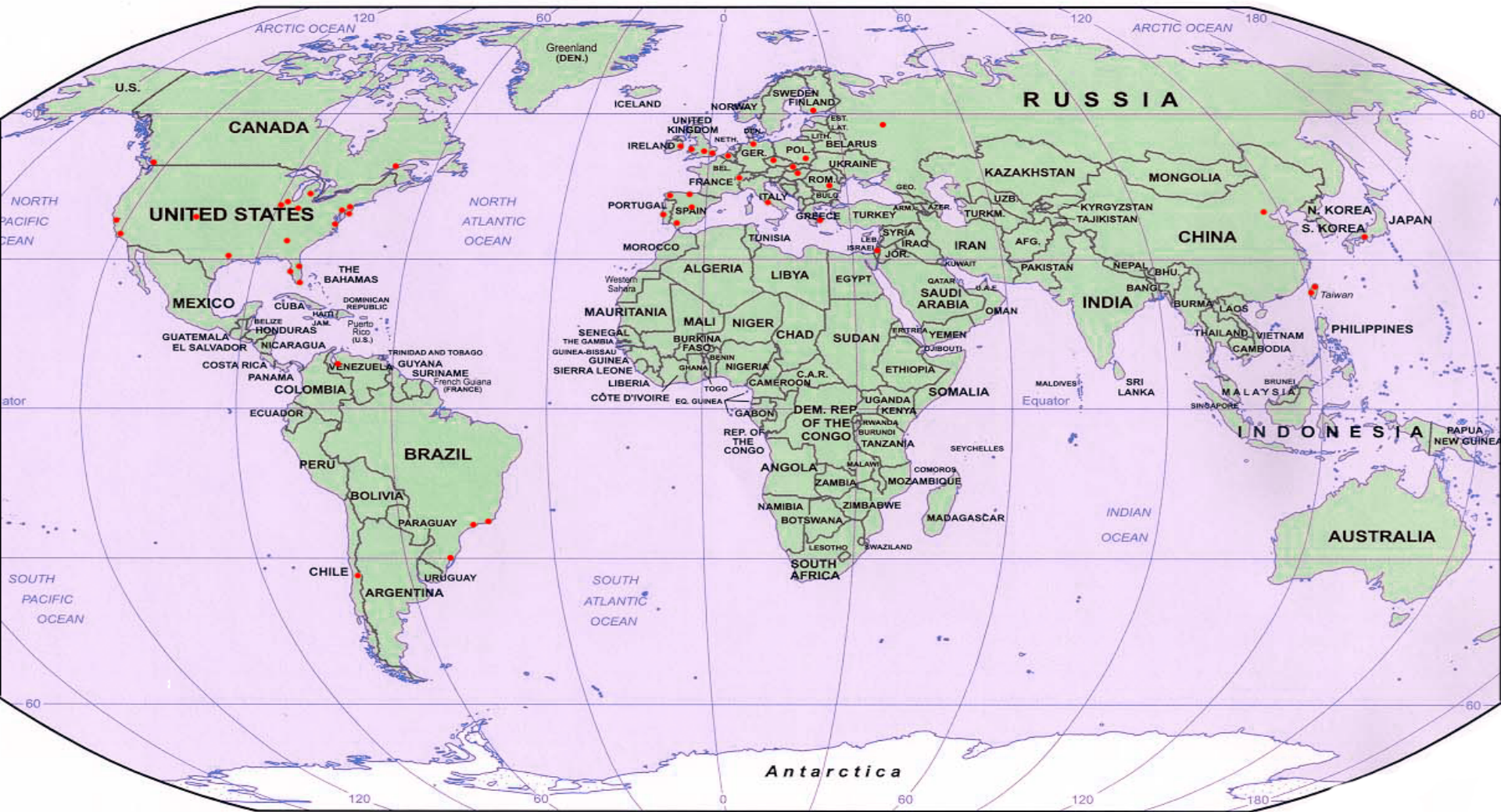
<b>USA</b>	<b>26</b>
<b>Spain</b>	<b>5</b>
<b>Brazil</b>	<b>5</b>
<b>Switzerland</b>	<b>4</b>
<b>UK</b>	<b>4</b>
<b>France</b>	<b>2</b>
<b>Canada</b>	<b>2</b>
<b>Taiwan</b>	<b>2</b>
<b>Greece</b>	<b>2</b>
<b>Portugal</b>	<b>2</b>
<b>Israel</b>	<b>2</b>
<b>Japan</b>	<b>2</b>
<b>Poland</b>	<b>1</b>
<b>Italy</b>	<b>1</b>

<b>Finland</b>	<b>1</b>
<b>Chile</b>	<b>1</b>
<b>Pakistan</b>	<b>1</b>
<b>Venezuela</b>	<b>1</b>
<b>Hungary</b>	<b>1</b>
<b>China</b>	<b>1</b>
<b>Slovakia</b>	<b>1</b>
<b>Ireland</b>	<b>1</b>
<b>Russia</b>	<b>1</b>
<b>Czech Republic</b>	<b>1</b>
<b>Belgium</b>	<b>1</b>
<b>Romania</b>	<b>1</b>
<b>Germany</b>	<b>1</b>





# VRVS network server distribution worldwide for High Energy Nuclear Physics





# VRVS Statistics





## VRVS registered users (up to June 12th, 2003)

USA	920
Spain	753
Switzerland	280
Italy	208
Germany	190
France	183
UK	166
Brazil	165
Japan	83
Canada	72

Number of Registered Users:

**4051**

From

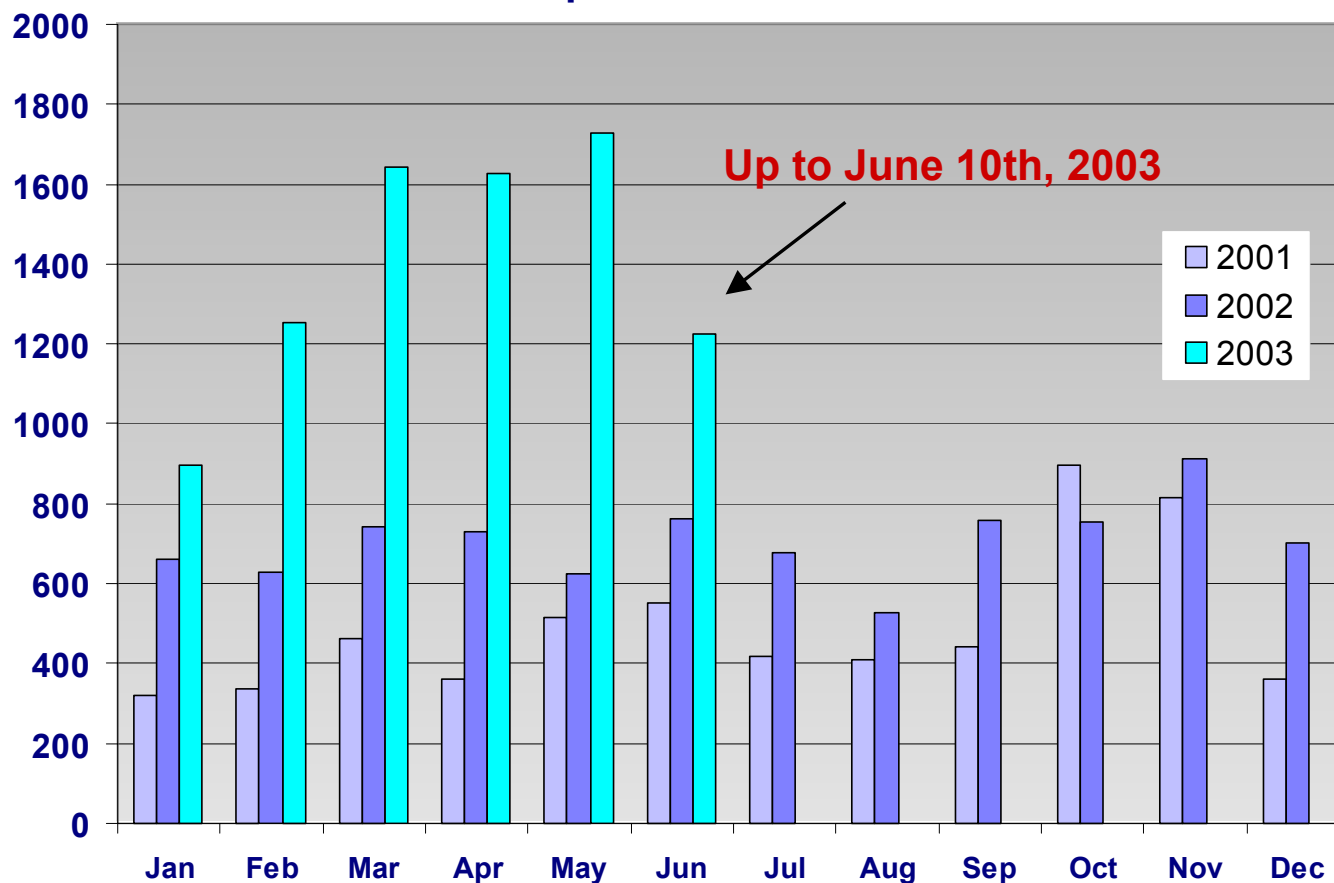
**81 Countries**

Taiwan, Greece, Argentina, Russia, etc...



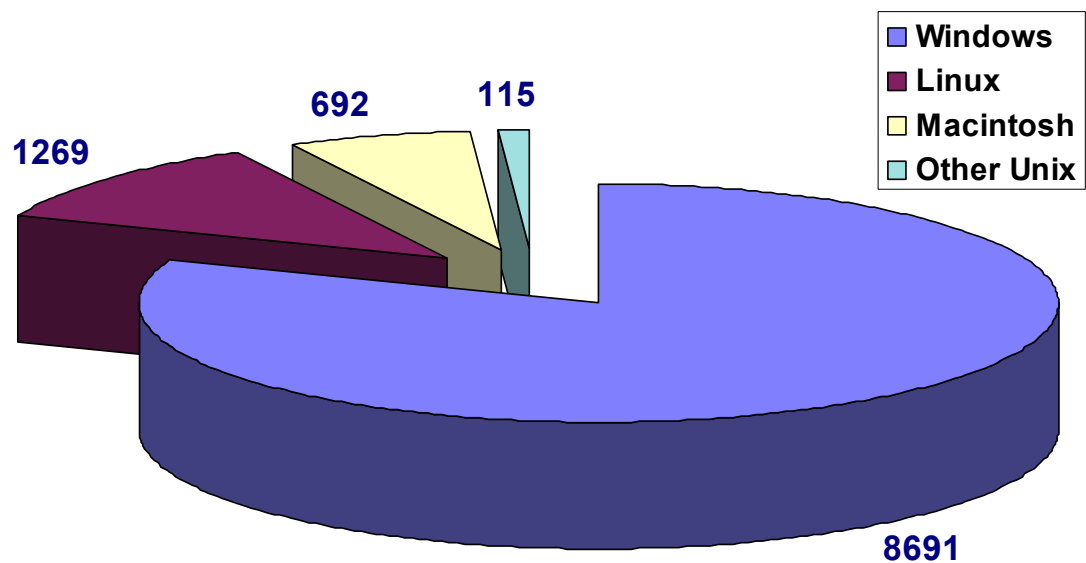


## Scheduled Multipoint Videoconferences Sessions



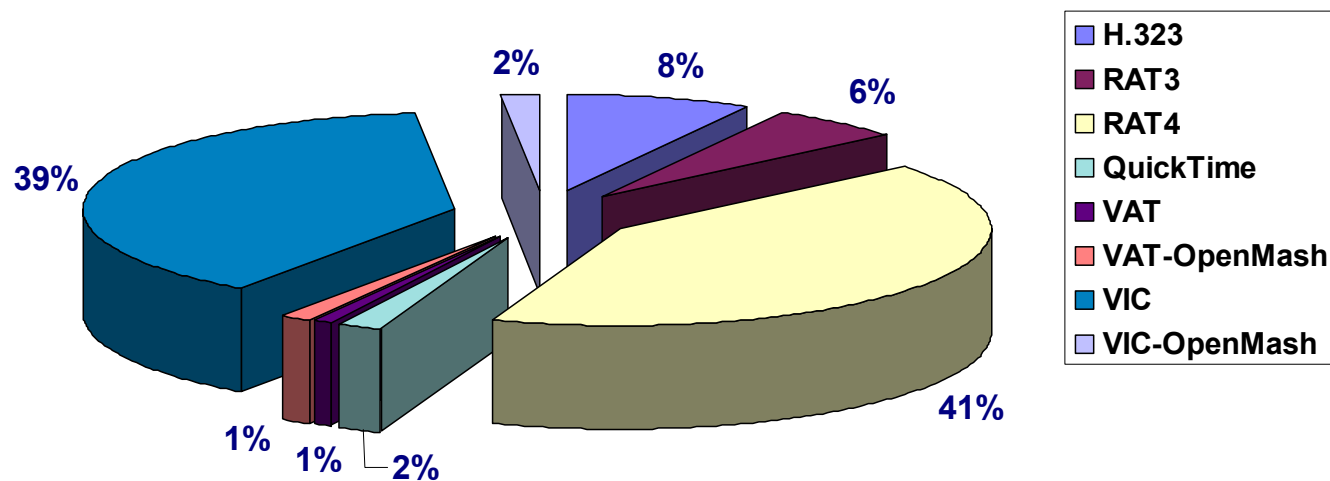


## VRVS Machines O/S distribution





**Videoconferencing Tools used with VRVS (June, 12th 2003)**  
(Total 125076 connections)





# VRVS connections per communities

**A community hosts a dedicated set of Virtual Rooms**

<b>Universe</b>	<b>97132</b>
<b>RedIRIS</b>	<b>27883</b>
<b>AccessGrid</b>	<b>5647</b>
<b>Astro</b>	<b>4419</b>
<b>Fusion</b>	<b>4714</b>
<b>CMS-Control Room</b>	<b>673</b>





# **VAG - Using VRVS as a personal AG node**





# Virtual Access Grid

- User can connect to either **unicast or multicast** videoconferencing with full supported features
- Users can enter **through VRVS** in AG virtual venues with different Video Modes possible:
  - **Voice switched**: default mode for H.323 clients. One video stream at a time
  - **Timer switched**: browse through all the video based on a preset timer. One video stream at a time.
  - **Selected Streams**: Click among the video participants to view selected video streams (one or several streams available).
  - **All Streams**





# When to use VRVS AG?

	AG	VRVS	VAG
Multi-cast	✓	✓	✓
Unicast		✓	✓
On-Site AG Node	✓	✓	✓
Without AG Node		✓	✓
High Quality Video	✓	✓	✓
High Quality Audio	✓	✓	✓
H.323		✓	✓
High (> 20Mbps) Bandwidth	✓	✓	✓
Normal (10Mbps) / Low (<1Mbps) Bandwidth Network		✓	✓







# Ongoing and Future Developments





# Next developments (1/3)

- Adaptation to emerging standards: **IPv6, SIP**
- Integration of new hardware/software for **high-end interactivity**
  - Developed a multipoint videoconferencing system based on **MPEG4 compression standard**
  - In the future, develop **HDTV** based videoconferencing services
- Improve Security
  - Easy support of **Firewall and NAT**
  - Conference **access control, user authentication and authorization**





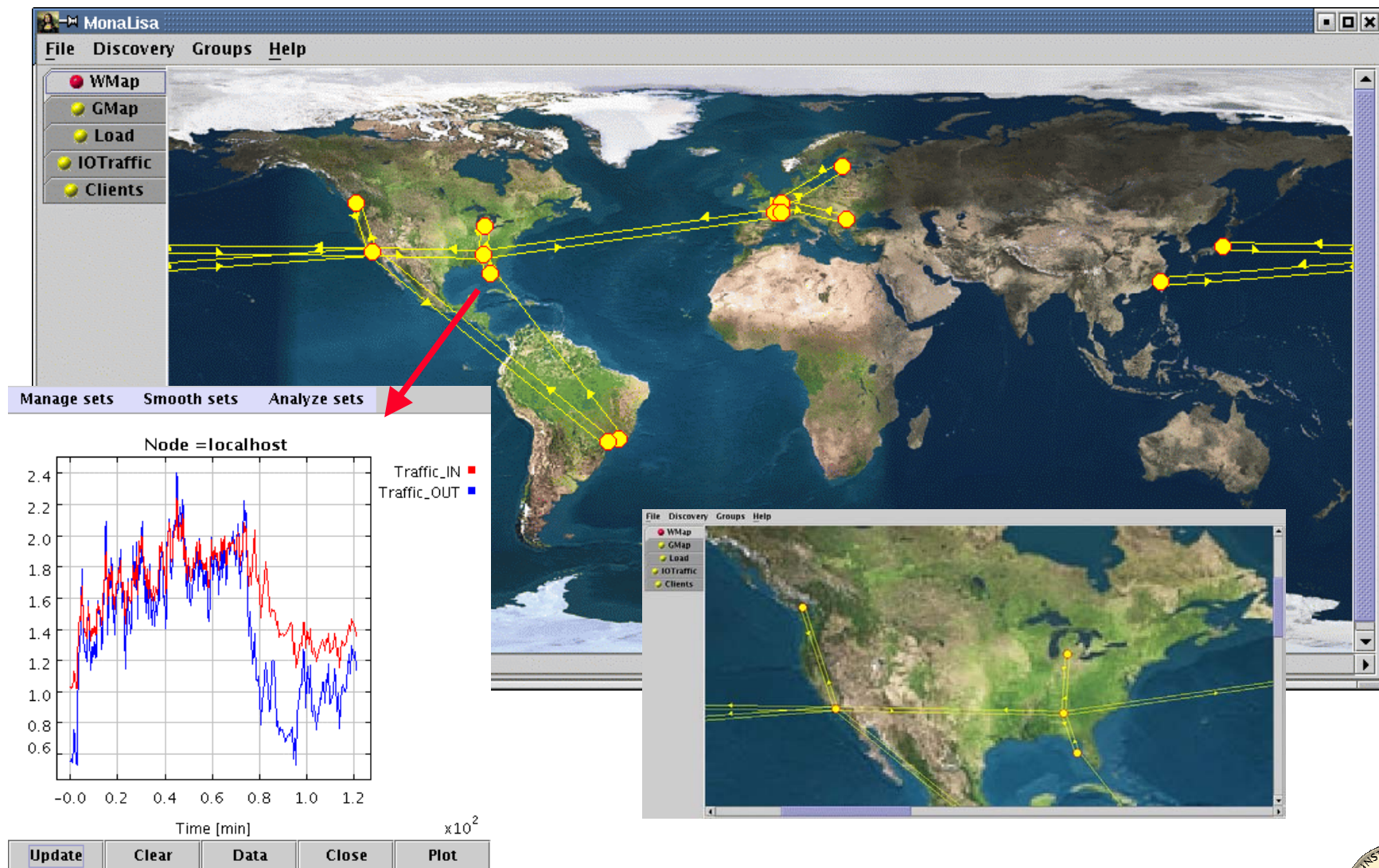
## Next developments (2/3)

- Develop a pure peer-to-peer VRVS Network servers network to be able to **handle thousands of parallel sessions**
- Develop **advanced network monitoring agents** (based on Java and web services) to run on each network server
  - We will know **in real time**, packet loss ratio between servers, jitter, bandwidth available, VRVS Network servers system information (CPU, memory, ..)
  - Possibility to **automatic rerouting** between VRVS network servers to find a **better network path**



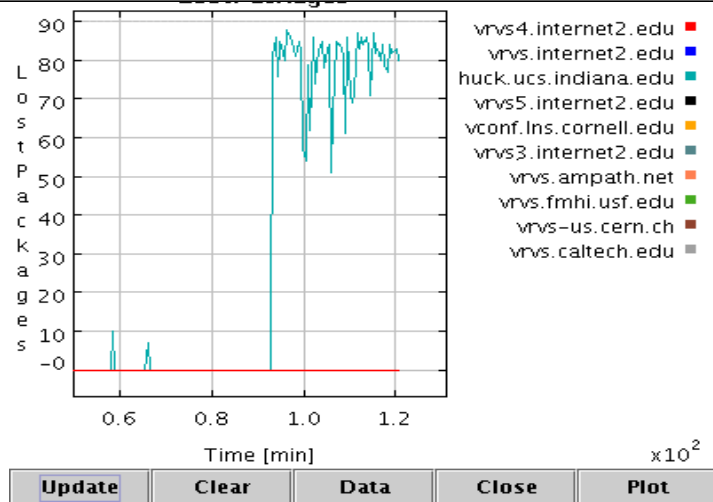
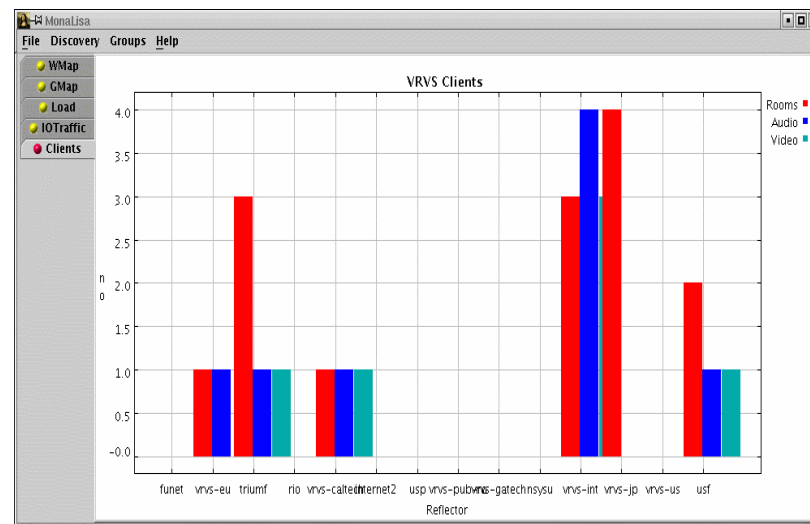
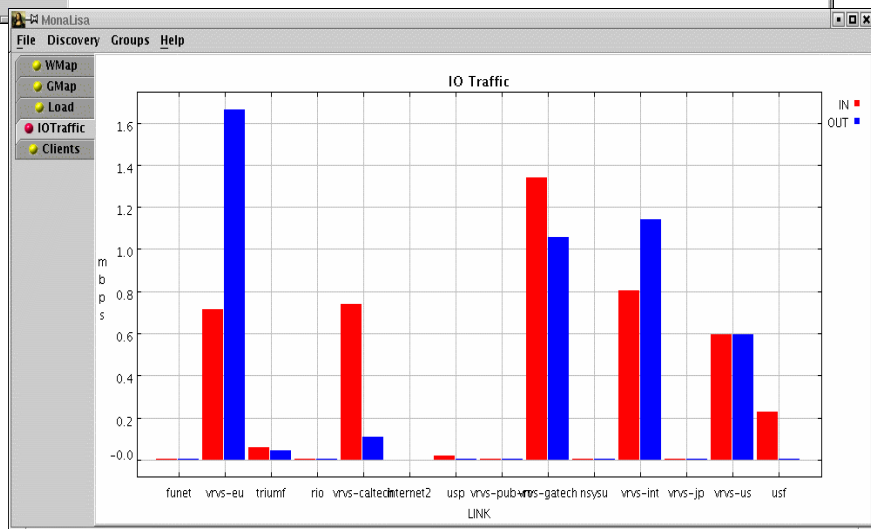
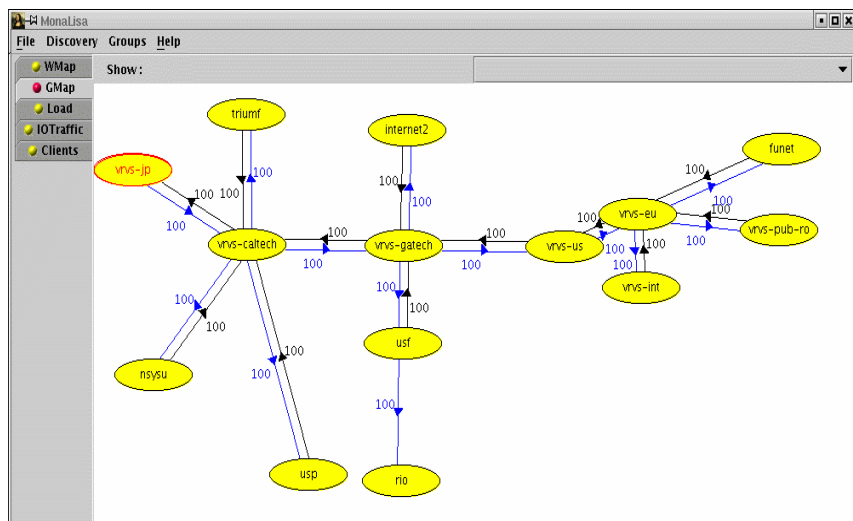


# VRVS Reflector monitorization (1)





# VRVS Reflector monitorization (2)





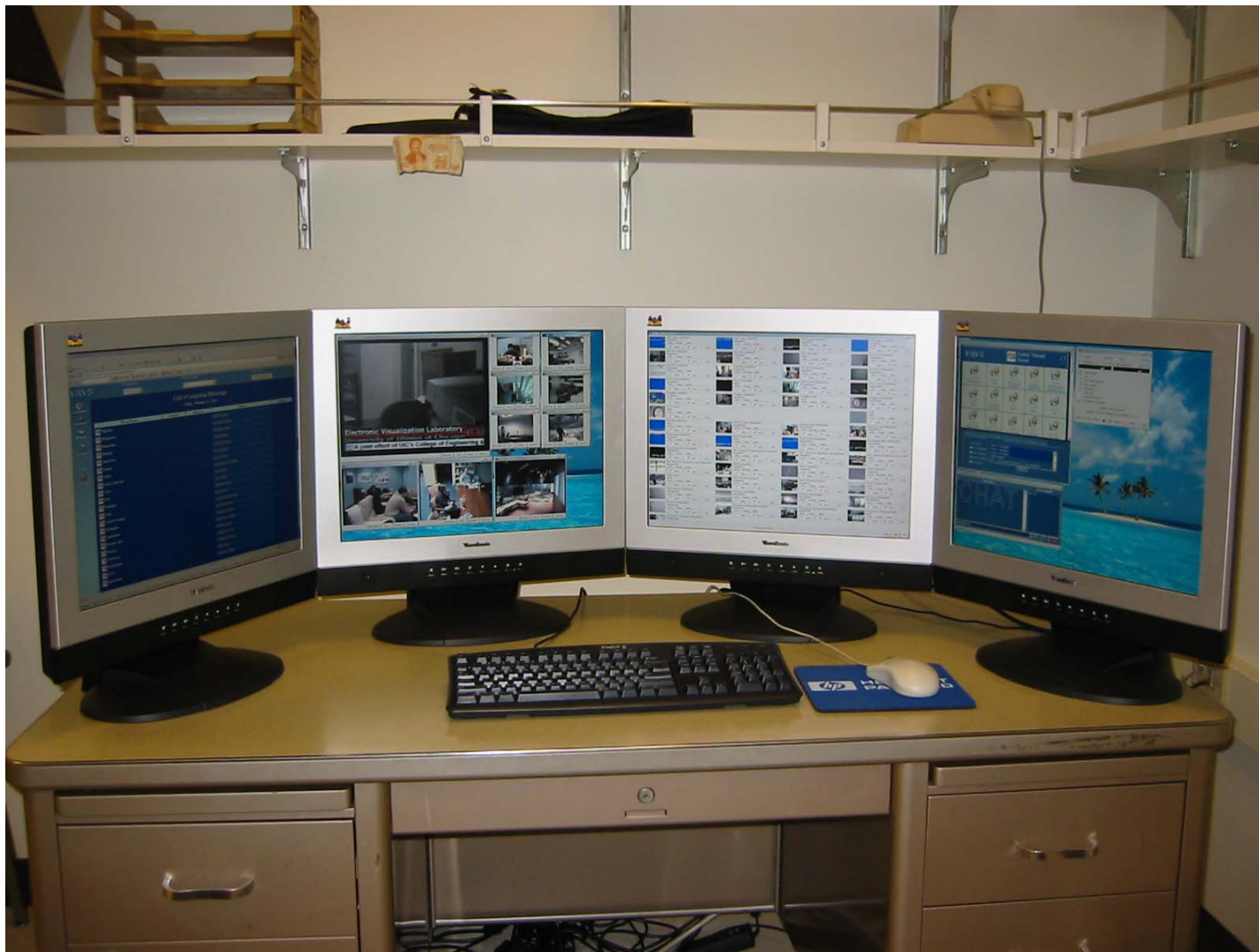
# Next developments (3/3)

- **Wireless/Handheld Client Integration**
  - Currently developing user Interface for small screens
  - Integration of low end clients:
    - Provide dedicated software clients (VVP, JMF)
    - Transcode streams to have lower bandwidth
    - Support MPEG4





# VRVS Virtual Space Setup





# VRVS Team

**Harvey B Newman**

**Philippe Galvez**

**Gregory Denis**

**David Collados**

**Kun Wei**

**Dave Adamczyk**

**Joao Fernandes**





# Further References

- <http://www.vrvs.org>
- [support@vrvs.org](mailto:support@vrvs.org)

